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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,859	08/21/2003	Hiroyuki Kakiuchi	241676US0XCONT	6303
22850	7590	06/30/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			JIANG, CHEN WEN	
			ART UNIT	PAPER NUMBER
			3744	
			NOTIFICATION DATE	DELIVERY MODE
			06/30/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/644,859	Applicant(s) KAKIUCHI ET AL.	
	Examiner Chen-Wen Jiang	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 41-108 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-19, 53-60, 66-68 and 78-80 is/are allowed.
- 6) ☒ Claim(s) 1-11, 20, 21, 41-52, 61-65, 69-77 and 81-108 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Examiner contacts Stefan Koschmieder on 6/20/2008 regarding the arguments are directed to the new added claims and the validity of the double patent rejection. Examiner is suggested to provide new Office Action and Applicants will respond accordingly.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1,4,5,6,9,20,41,42,45,46,47,50,61,63-65,69-71,75-77,81-83,89,95,90,96,100,101,102,103,104 and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroyuki et al. (JP 11-223411) in view of Komarneni et al. (AW IDS filed 12/19/2006).

Hiroyuki et al. disclose three type of adsorption heat pump: 1. the adsorption heat pump in the prior art with adsorption/desorption part, condenser and evaporator in the prior art [0003];

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2. prior art of 1 with the addition of compressor 10 as shown in Fig.1; 3. prior art of 1 with the addition of two stages of adsorption/desorption part as shown in Fig.4. Therefore, the adsorption heat pump without the compressor has been disclosed in Hiroyuki et al. Komarneni et al. disclose adsorbent for dehumidification and cooling (HVAC) system and any one of the three adsorption heat pumps is a dehumidification and cooling system. Hiroyuki et al. also disclose the heat source temperatures of 80°C or more [0006], 70°C or more [0007] and 50°C [0010] can be used. The 70°C, 80°C and 50°C are within the claimed ranges. Hiroyuki et al. disclose the invention substantially as claimed. Hiroyuki et al. disclose a heat pump system for vehicle as shown in Fig.4, the system comprises adsorption heat pump 1, reaction containers 11,12 filled with adsorbent, condenser 14, evaporator 13, pressure machine 10 and bypass valve 29. However, Hiroyuki et al. do not disclose claimed adsorbent material. Komarneni et al. disclose high performance nanocomposite desiccation materials. The dry agent comprise a zeolite (adsorption/desorption) for gas thermal vaporization and cooling systems (heat pump) (p.18). It is described that water adsorption/desorption amount was measured at 25°C (p.19, line 4). Table 1 discloses the dry agent zeolite comprises aluminum, phosphorus and heteroatom. The water absorption amount of SAPO-17 is 0.306 g/g when a relative vapor pressure (P/P_0) = 0.9 (p.20, Table 1); and the adsorption amount change of SAPO-17 when a relative vapor pressure is changed by 0.15 in the relative vapor pressure range of 0.05 to 0.30, which is obtained based on the adsorption isotherm, is about 0.20 g/g (p.33, Fig. 15b). Therefore, SAPO-17 (CHA term) disclosed in Komarneni et al. is the adsorbent that satisfies the condition of the constituent features. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Hiroyuki et al. using SAPO-17 in view of

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Komarneni et al. to perform heat pump operation since SAPO-17 is a known absorbent material. In regard to the additional decompression device in the apparatus of Hiroyuki et al. as asserted by the Applicant, Fig.4 has bypass valve 29. The valve 29 is used when there is no need to pass the adsorbent through compression/decompression device 10 as described in Hiroyuki et al. Therefore, the Applicant's apparatus is equivalent to Hiroyuki et al.'s apparatus when the device 10 is turned off. Furthermore, without decompression is not in the claim.

In regard to claims 5,6,46 and 47, the species of SAPO-17 is disclosed by Komarneni et al., the gel of $\text{ICHA}:0.1\text{SiO}_2:\text{Al}_2\text{O}_3:\text{P}_2\text{O}_5:50\text{H}_2\text{O}$ is disclosed as a specific example of the composition. In the composition of Table 1: an atomic ratio of Si:Al:P is 0.1:2:2; a molar ratio X of the heteroatom (Si) is $0.1/4.1 = 0.0243$; and each of molar ratios of y (Al atom) and z (P) is $2/4.1 = 0.488$, which overlap with the claimed range (p18, lines 1-4).

4. Claims 2,3,7-11,21,43,44,48-52,62,72-74,84-88,106,107,108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroyuki et al. (JP 11-223411) in view of Komarneni et al. (AW IDS filed 12/19/2006) and further in view of Mizota et al. (JP 2001-239156).

Meier et al. disclose that the framework density of SAPO-37 is $12.7 \text{ T}/1,000\text{\AA}^3$ (p.104) and this range overlaps with the claimed range and used for heat pump as described in the disclosure. Table 1 of Komarneni et al. presents several types of CHA descriptions and gel compositions.

In regard to claims 3 and 44, Mizota et al. disclose the preferred mean particle diameter of 0.1-20 micrometers. The particle diameter and pore diameter are approximately equal since the particles are mutual connected and leave the spaces between are approximately the same diameter of the particle diameter.

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In regard to claims 7,48 and 87, Meier et al. disclose the intensity area ratio as showing at the end the reference as marked of (within the Meier et al.).

2002-175356 [受付日]平成18.05.30 1
3.] 参考資料 1

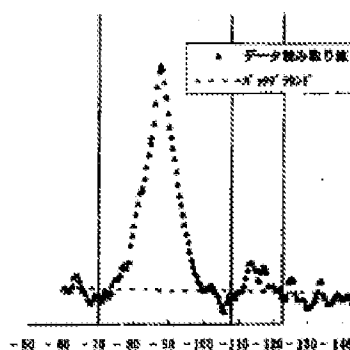
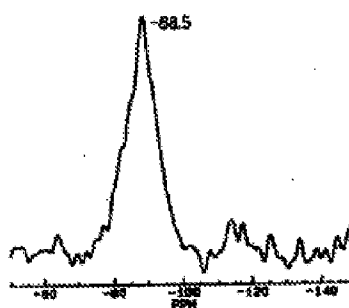
【添付書類】

1 0 f 4

【物件名】 参考資料 1

かほおよび再水和したSAPO-17サンプルの ^{29}Si -NMRのプロファイルを用いた表計算ソフトにデジタルデータとして取り込み（下図参照）。請求項1に規定する信号強度の積分強度面比を求めたところ下のようになります。

$$\frac{(-108\text{ ppm} \sim -123\text{ ppmの信号強度の積分強度面積})}{(-70\text{ ppm} \sim -123\text{ ppmの信号強度の積分強度面積})} \approx 6\%$$



1

In regard to claims 8,21,49,62,72-74 and 84-86, Meier et al. disclose the intensity area ratio as showing at the end the reference as marked as (within the Meier et al.).

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[特許] 2002-175356 [受付日] 平成18.05.30 1/E
 【物件名】 参考資料 2

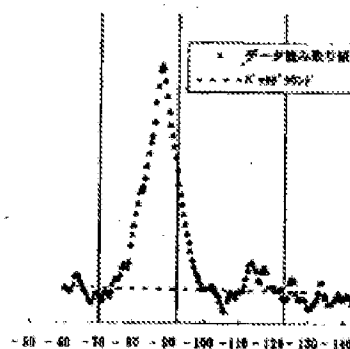
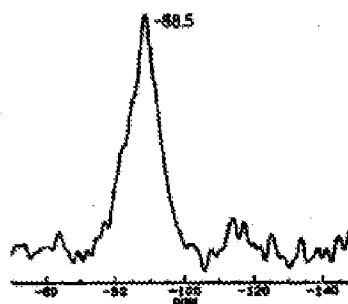
【添付書類】

1 069

【物件名】 参考資料 2

かほおよび再水化したSAPO-17サンプルの ^{29}Si -NMRのプロファイルを用いた解析ソフトにデジタルデータとして取り込み（下記参照）、請求項2に渡す相対強度の積分強度面積比を求めたところのようになります。

$$\frac{(-7.0 \text{ ppm} \sim -9.2 \text{ ppm}) \text{ の積分強度面積}}{(-7.0 \text{ ppm} \sim -12.3 \text{ ppm}) \text{ の積分強度面積}} = 6.2\%$$



2

In regard to claims 11 and 52, Meier et al. disclose the adsorption amount at a relative vapor pressure of 0.05 is 0.03g/g (within the Meier et al.).

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12002-175556 [受付日]平成18.05.30 1/7
[名] 参考資料 4

[添付書類]

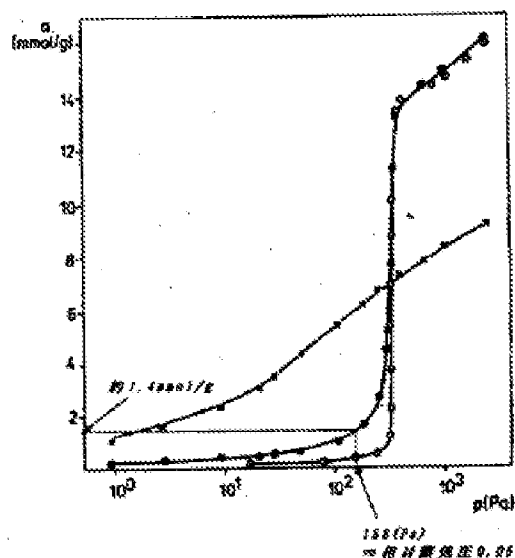
069

【案件名】 参考資料 4

下図に示すSAPO-17の吸着等温線(298K)から、相対蒸気圧0.05(⇒3167Pa×0.05=158Pa; 3167Paは298Kでの飽和蒸気圧)の吸着量は、下式のように約0.03g/gとなります。

$$\text{約 } 1.4 \text{ mmol/g} / 18$$

ここで、水の分子量は18.0である。

$$\text{約 } 1.4 \text{ mmol/g} / 1000 \times 18.0 \approx \text{約 } 0.03 \text{ g/g}$$


4

Double Patenting

5. Claims 1-11,20,21,41-52,61-65,69-77 and 81-88 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-25 of copending Application No. 11/235,704. Although the conflicting claims are not identical, they

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are not patentably distinct from each other because claims 1-25 of copending Application No. 11/235,704 includes the all limitations of independent claims 1,20,21,42,61 and 62 of this application. Applicant is reminded that heat pump is in the preamble of the copending application and the details of the apparatus and method are provided in the claims 12,13,14,15 and 23-25.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

6. Claims 12-19,53-60,66-68 and 78-80 are allowed.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chen-Wen Jiang whose telephone number is (571) 272-4809.

The examiner can normally be reached on Monday-Thursday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chen-Wen Jiang/
Primary Examiner, Art Unit 3744